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ABSTRACT

Digital Chisel is a user-friendly multimedia authoring tool for helping students and teachers to tutor/teach the computer. It can be used as a visual presentation tool, as a tool to provide individualized instruction and as a tool to help students learn using a variety of visual and auditory modes. Interactive presentations can be designed without any knowledge of programming or scripting; the presentations, called projects, consist of a collection of screens, which contain a combination of text, graphics, sounds, animations, and movies. The projects are designed so that clicking on objects on the screen performs a variety of Digital Chisel events; every object in a project can perform 1 or as many as 24 separate actions. Text can be typed or text files can be imported from any word processing program. Graphics may be imported or created using the drawing and painting tools. Sounds can be used from sound-clip files or recorded directly; movies can be imported from video-clip files. All these multimedia objects can be stored in a media file called a library. In addition to presentations, screens can be designed to be visual, interactive quizzes or test questions; the quiz screens have the ability to record users' responses into a database and to calculate the percentage of correct answers. Four figures illustrate the discussion. (AEF)

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Digital Chisel: A Visual Multimedia Authoring Tool

by John McCullough and Richard A. Couch

ED 391 502

Tool, Tutor and Tutee

Robert Taylor in his book, *The Computer in the School: Tutor, Tool, and Tutee* (1980) proposes that the computer be used in three ways in schools; as a tool, as a tutor and as a tutee. Most schools are using the computer as a tool for both the teacher and the student, e.g. word processors, statistics packages, spreadsheets, databases and draw/paint packages. Some schools are using it as a tutor, e.g. drill and practice, games, tutorials, and simulations, etc. However, very few schools are using the computer as a tutee.

The Computer as Tutee

In describing the role of the computer as a tutee we first have to think about how students learn and what kinds of activities students should perform in order to retain information and learn to think.

When students are asked to tutor their peers or when they are asked to teach others some information, they learn a great deal. Most often students will learn more by teaching others than if they were sitting and listening to someone else "tell" them. This teaching of others concept is the idea behind the computer as tutee. When we ask a student to teach/tutor/program the computer in order to teach others (their peers, parents, etc.), the student must construct the knowledge in their own mind in a logical and learnable manner or they must do research to find out more about the subject before they present it in a memorable way for others. In order to perform these high level intellectual skills, the programmer must really understand the content they hope to teach. Many of us have experienced this phenomenon in our own teaching. When we start to teach a subject, we spend a great deal of time learning the content, and as we teach the same subject for an extended period of time, we continue to learn even more. Any age or ability level student can teach/tutor the computer if the authoring tools are user-friendly.

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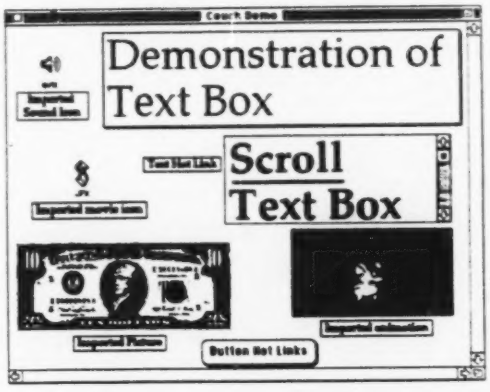
The student programmer, obviously, learns more about the content being programmed into the computer than the person who would use the program as a tutorial. *Digital Chisel* is a wonderful, sophisticated yet user-friendly authoring tool for helping students and teachers to tutor/teach the computer, thus allowing them an opportunity for higher level thinking and retention of information. Besides using *Digital Chisel* in the role of tutee, it can also be used by the teacher as a tool to create individual tutorials for students and as a presentation tool to enhance classroom and professional presentations. But we as classroom teachers need to be spending more time allowing and helping our students to construct knowledge. *The Chisel* is a great tool to help us accomplish the above mentioned educational tasks.

Digital Chisel

Digital Chisel is an elaborate but simple-to-use visual, multimedia, authoring tool. It was designed by teachers for creating interactive educational presentations. You can design all types of interactive presentations without any knowledge of programming or scripting which is required in HyperCard. These presentations, called projects, consist of a collection of screens. Each screen contains a combination of text, graphics, sounds, animations, and movies. You can create screens from scratch using *Digital Chisel's* basic drawing and painting tools, or you can choose from fifteen ready-made screen templates. The beauty and power of *Digital Chisel* are in the complete flexibility of project design. Instead of a boring, linear, worksheet-like project, *Digital Chisel* encourages advanced, cognitive-web designs. Projects allow users to pursue their thinking. For example, you could create a project for your students that studies animals of the South American jungles. A student could click on a picture of a Jaguar to learn more about it. A box of text would appear presenting factual information about these big cats and where they are found in the world. Then, the student could click on the countries listed to view a map of the world. When satisfied, the user can return to the main part of the project. *Digital Chisel* projects are limited only by the author's imagination.

Figure 1
A sample screen with many objects



When you create a collection of screens for a project, everything viewed on each screen is called an

object (Figure 1). Text, graphics, still frames of movies and small pictures called icons are all considered objects. Each object acts like a button on the screen. You design your project so that clicking on objects on the screen performs a wide variety of *Digital Chisel* events. Each object, when clicked, can be set to play a movie, play a sound, display an animation, navigate to another screen, play a videodisc segment, play an audio CD, send an action to another object, speak a segment of text, or pause for a given period of time. Amazingly, every object in a project can perform one action or as many as 24 separate actions. All this can can be accomplished without any knowledge of programming. Simple, pull-down menus are provided which allow you to define the actions (Figure 2).

Figure 2
Pull-down menus make choosing actions simple

Text on a *Digital Chisel* screen can be typed or text files can be imported from any word processing program. You create a box on the screen called a field and type or import text into it. *Digital Chisel* considers the field as an object, so if a user clicks on the field, any of the previously defined actions can be performed. In addition to considering the entire field as an object, *Digital Chisel* allows you to define any word or sequence of text as a 'hot link' (Figure 3).

Figure 3
Hot links are displayed as underlined words

When a user clicks on the hot link, any of the actions previously described can be performed. Some common uses of hot links are to provide definitions of words or to display a picture, movie, or sound to illustrate a new concept.

The most essential components of a visual, multimedia project are pictures and graphics. *Digital Chisel* can import PICT files, a common file format for many clip art files and graphics created by other drawing applications. However, you are not limited to importing ready-made graphics, you can create your own easily by using *Digital Chisel's* powerful drawing and painting tools. *Digital Chisel* provides line shape, fill, eraser, text,

paintbrush, coloring, and selection tools just like most drawing applications. Once created, just drag your graphic to where you want it on the screen, or copy it and paste it on other screens in your project.

Sounds can be imported from sound-clip files or recorded directly by you. *Digital Chisel* is compatible with AIFF format, one of the most commonly used sound formats. Provided your computer has a microphone, you and your students can record and save voices, sounds, and music. After sounds are saved, they can be played as an action of any object in your *Digital Chisel* project.

Movies are an excellent multimedia component of any *Digital Chisel* project. *Digital Chisel* can import QuickTime movies from video-clip files. QuickTime is the most common movie format used by personal computers. To watch a movie, a user just clicks on a still frame of the movie, or a small movie icon that has been placed anywhere on the screen. Another possibility is that a user can click some other object on the screen, and the movie will appear and begin to play. When the movie is finished, many options remain. The movie's still frame or icon is just like any other object on a screen, all previously discussed actions can be defined.

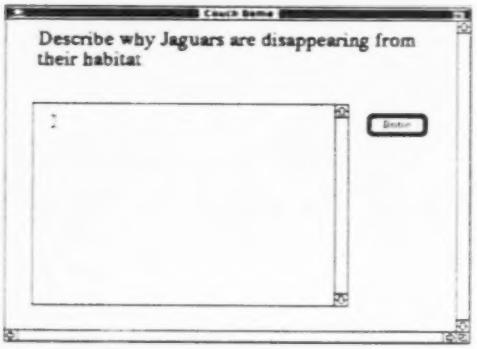
Digital Chisel goes beyond providing you with the capability of importing text, sound, graphics, and movies. You can store all these multimedia objects in a media file called a library. The library allows you to view all these files in a small window on the screen. You place any file in your project simply by dragging it from the library to any location on your screen. This feature makes *Digital Chisel* easy enough for anyone to author powerful, visual, interactive projects without any knowledge of programming.

Multimedia presentations are only the beginning. *Digital Chisel* is also an elaborate testmaker. You can design any screen to be a visual, interactive quiz or test question. Quiz screen templates are provided from *Digital Chisel* pull-down menus. You can choose a ready-made multiple choice, true/false, matching, picture pick, typed response, or essay question quiz screen. You simply make your choice of a template and replace the 'dummy' question and answers with your own. You can still add all the text, graphics, sounds, and movies you want to the quiz screen.

The most powerful feature of quiz screens is the ability to record the user's responses into a database. *Digital Chisel* provides you with several options for creating a response database. Then, when a user runs the project, *Digital Chisel* automatically records into the database whether or not the questions were answered correctly and how long it took to answer the questions. If the question requires a

typed response or an essay answer, the student's entire response is recorded in the database for you to view later (Figure 4).

Figure 4
A sample essay question quiz screen



Digital Chisel even calculates the percentage of correct answers. You can view responses and scores just by opening the database. The database can also be exported to a spreadsheet or word processing file for use in letters and reports.

Digital Chisel is an exceptional, award-winning, multimedia authoring tool. MacUser magazine chose *Digital Chisel* as winner of the Tenth Annual Editor's Choice Awards for best multimedia software in 1994. Anyone can use *Digital Chisel's* pull-down menus to simply add text, graphics, animations, sounds, and movies and create a powerful, visual, interactive presentation without any prior knowledge of computer programming. A well-designed user's manual and a CD-ROM packed with libraries, pictures, sounds, and movies make your *Digital Chisel* projects of exceptional quality. Digital Chisel is published by Pierian Springs Software and the authors can attest to the personal responsiveness of the company. We have a lab which is networked and has *At Ease* as a student security and document retrieval system. Because of the *At Ease* software we have had a couple of glitches with *The Chisel* and the Pierian Springs Software has been tremendously cooperative, responsive, and helpful.

As Visual Tutee

Digital Chisel is a multimedia authoring tool that can help educators in many ways. It can be extremely helpful as a visual presentation tool; as a tool to individualize instruction and to keep individual records of student progress; and as a tool to help students learn using a variety of visual and auditory modes. But as a multimedia authoring software, educators need to be using *Digital Chisel* as a way to help motivate students and to help them to construct their own knowledge by teaching others in the tutee mode.

References

Digital Chisel (1995). Pierian Spring Software. Portland, Oregon.

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